

## REMARKS

Claims 1-10 were examined and reported in the Office Action. Claims 1-10 are rejected. Claim 2 is canceled. Claims 1, 5 and 6 are amended. Claims 1 and 3-9 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. § 102(b)

A. It is asserted in the Office Action that claims 1, 4-5, 8 are rejected under 35 U.S.C. § 102(b), as being anticipated by Korean Patent No. KR 2001-63468 issued to Ahn et al. ("Ahn I"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." (Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the ... claim." (Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, *i.e.*, identity of terminology is not required. (In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990))."

Applicant's amended claim 1 contains the limitations of "[a] capacitor comprising: a substrate; an interlayer insulating layer formed on the substrate; a contact plug connected to the substrate by passing through the interlayer insulating layer; a bottom electrode formed on the interlayer insulating layer and the contact plug; an oxygen diffusing layer containing nitrogen on the bottom electrode; an oxygen diffusion barrier layer containing aluminum on the oxygen diffusing layer; a dielectric layer on the oxygen diffusion barrier layer; and a top electrode on the dielectric layer."

Applicant's claim 5 contains the limitation of "[a] method for fabricating a capacitor, comprising the steps of: a) forming an interlayer insulating layer on a substrate; b) forming a contact plug connected to the substrate by passing through the interlayer insulating layer; c) forming a bottom electrode formed on the interlayer insulating layer and the contact plug d) forming an oxygen diffusion layer containing nitrogen on the bottom electrode; e) forming an oxygen diffusion barrier layer containing aluminum on the oxygen diffusion layer; f) forming a dielectric layer on the oxygen diffusion barrier layer; and g) forming a top electrode on the dielectric layer.

Ahn I discloses a method for forming a capacitor. The capacitor disclosed by Ahn I has a dielectric layer composed of aluminum oxide, and a tantalum oxide layer is formed on a lower electrode. An upper electrode is formed on the entire structure. Nowhere in Ahn I is an interlayer insulating layer disclosed, taught or suggested. That is, Ahn I does not teach, disclose or suggest "an interlayer insulating layer formed on the substrate; a contact plug connected to the substrate by passing through the interlayer insulating layer; a bottom electrode formed on the interlayer insulating layer and the contact plug" or "forming an interlayer insulating layer on a substrate; b) forming a contact plug connected to the substrate by passing through the interlayer insulating layer; c) forming a bottom electrode formed on the interlayer insulating layer and the contact plug."

Therefore, since Ahn I does not disclose, teach or suggest all of Applicant's amended claims 1 and 5 limitations, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Ahn I. Thus, Applicant's amended claims 1 and 5 are not anticipated by Ahn I. Additionally, the claims that directly or indirectly depend on claims 1 and 5, namely claims 4, and 8-10, respectively, are also not anticipated by Ahn I for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejections for claims 1, 4-5 and 8 are respectfully requested.

**B.** It is asserted in the Office Action that claims 1, 4-5 and 8-10 are rejected under 35 U.S.C. § 102(b), as being anticipated Publication No. US 2002/0094624 A1 by

Ahn et al. ("Ahn II"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Ahn II discloses a method for forming a cell capacitor used for DRAM. The capacitor disclosed by Ahn II has a double layer construction of aluminum oxide and a mixed layer of TiON and TiO<sub>2</sub>. Nowhere in Ahn II is an interlayer insulating layer disclosed, taught or suggested. That is, Ahn II does not teach, disclose or suggest "an interlayer insulating layer formed on the substrate; a contact plug connected to the substrate by passing through the interlayer insulating layer; a bottom electrode formed on the interlayer insulating layer and the contact plug" or "forming an interlayer insulating layer on a substrate; b) forming a contact plug connected to the substrate by passing through the interlayer insulating layer; c) forming a bottom electrode formed on the interlayer insulating layer and the contact plug."

Therefore, since Ahn II does not disclose, teach or suggest all of Applicant's amended claims 1 and 5 limitations, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Ahn II. Thus, Applicant's amended claims 1 and 5 are not anticipated by Ahn II. Additionally, the claims that directly or indirectly depend on claims 1 and 5, namely claims 4, and 8-10, respectively, are also not anticipated by Ahn II for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejections for claims 1, 4-5 and 8-10 are respectfully requested.

C. It is asserted in the Office Action that claims 1-8 are rejected under 35 U.S.C. § 102(b), as being anticipated by Lee et al. (US 2003/0052374 A1). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Lee discloses a semiconductor device having a double dielectric layer. The double dielectric layer includes a first dielectric layer having aluminum and a second dielectric layer having a dielectric constant higher than the first dielectric layer. The two dielectric layers are stacked upon one another. Nowhere in Lee is an interlayer insulating layer disclosed, taught or suggested. That is, Lee does not teach, disclose or suggest "an interlayer insulating layer formed on the substrate; a contact plug

connected to the substrate by passing through the interlayer insulating layer; a bottom electrode formed on the interlayer insulating layer and the contact plug" or "forming an interlayer insulating layer on a substrate; b) forming a contact plug connected to the substrate by passing through the interlayer insulating layer; c) forming a bottom electrode formed on the interlayer insulating layer and the contact plug."

Therefore, since Lee does not disclose, teach or suggest all of Applicant's amended claims 1 and 5 limitations, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Lee. Thus, Applicant's amended claims 1 and 5 are not anticipated by Lee. Additionally, the claims that directly or indirectly depend on claims 1 and 5, namely claims 2-4, and 6-8, respectively, are also not anticipated by Lee for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejections for claims 1-8 are respectfully requested.

## II. 35 U.S.C. § 103

A. It is asserted in the Office Action that Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn I in view of Lee. Applicant has canceled claim 2. Therefore, the aforementioned rejection is moot.

B. It is asserted in the Office Action that Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn I in view of Applicant's admitted prior art (AAPA). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2142 "[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure."

(In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, “[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).” “All words in a claim must be considered in judging the patentability of that claim against the prior art.” (In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Applicant’s claim 3 directly depends on amended claim 1. Ahn I was addressed above in section I(A) regarding claim 1.

AAPA discloses forming hemi-spherical grains on a surface of an electrode. AAPA, however, does not teach, disclose or suggest “an interlayer insulating layer formed on the substrate; a contact plug connected to the substrate by passing through the interlayer insulating layer; a bottom electrode formed on the interlayer insulating layer and the contact plug.”

Therefore, even if Ahn I were combined with AAPA, the resulting invention would still not include all of Applicant’s claimed limitations. And, therefore, there would be no motivation to combine Ahn I with AAPA. Thus, Applicant’s amended claim 1 is not obvious over Ahn I in view of AAPA since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends from amended claim 1, namely claim 3, would also not be obvious over Ahn I in view of AAPA for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for Claim 3 is respectfully requested.

C. It is asserted in the Office Action that Claims 6-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahn I in view of Lee and AAPA. Applicant respectfully traverses the aforementioned rejection for the following reasons.

Applicant’s claims 6-7 depend on amended claim 5. Applicant has addressed Ahn I above in section I(A) regarding claim 5.

AAPA discloses forming hemi-spherical grains on a surface of an electrode.

Lee discloses a semiconductor device having a double dielectric layer. The double dielectric layer includes a first dielectric layer having aluminum and a second dielectric layer having a dielectric constant higher than the first dielectric layer. The two dielectric layers are stacked upon one another.

Neither Ahn I, AAPA nor Lee, however, teach, disclose or suggest or "forming an interlayer insulating layer on a substrate; b) forming a contact plug connected to the substrate by passing through the interlayer insulating layer; c) forming a bottom electrode formed on the interlayer insulating layer and the contact plug." Therefore, even if Ahn I, AAPA and Lee were combined, the resulting invention would still not include all of Applicant's claimed limitations. And, therefore, there would be no motivation to combine Ahn I, AAPA and Lee. Thus, Applicant's amended claim 5 is not obvious over Ahn I and AAPA in view of Lee since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from amended claim 5, namely claims 6-7, would also not be obvious over Ahn I and AAPA in view of Lee for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for Claims 6-7 are respectfully requested.

**CONCLUSION**

In view of the foregoing, it is submitted that claims 1 and 3-10 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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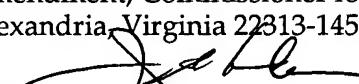
By:   
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Dated: August 23, 2004

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I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on August 23, 2004.

  
Jean Svoboda